ALGORITHM FOR SCREENING AND INITIAL MANAGEMENT OF DIABETIC MICROALBUMINURIA AND NEPHROPATHY: EXPLANATORY NOTES

1. Microalbuminuria is the earliest clinical evidence of incipient nephropathy. It is associated with progression to overt nephropathy and greatly increased risk of retinopathy and cardiovascular morbidity and mortality. Microalbuminuria is defined as urinary albumin/creatinine ratio (A/C) of ≥30 µg albumin /mg creatinine (which is equivalent to ≥30 mg albumin /g creatinine) in 2 out of 3 collections.*

2. Screening for proteinuria should begin as soon as possible after the diagnosis of type 2 diabetes. Screening for proteinuria in type 1 diabetes should begin with puberty once the duration of diabetes is at least five years. If proteinuria is present on routine dipstick, quantification will help in the development of a treatment plan (24 hour urinary protein or random protein/creatinine ratio). If the dipstick is negative for proteinuria, microalbuminuria should be checked. A microalbumin dipstick or tablet may be used on the same random sample of urine. If this is positive (>20 µg), a random A/C ratio should be done. If ≥30, it should be repeated on 2 collections over the next 3 months because of the day to day variability of albumin excretion. Two out of 3 should be positive before microalbuminuria is diagnosed. (Many laboratories will routinely do an A/C ratio if a random microalbumin is ordered. If dipstick or tablet for microalbumin is not available at the site of service, a random specimen should be sent to the laboratory for an A/C ratio. Check with your laboratory to see how this should be ordered).

3. A false positive urinary protein test may occur with the following circumstances: exercise in previous 24 hours, infection or fever, congestive heart failure, marked hypertension or marked hyperglycemia. These conditions should be resolved and the test repeated.

4. Several recent well-designed studies have shown that careful control of the blood glucose and blood pressure can reduce the progression to overt nephropathy, retinopathy and cardiovascular morbidity and mortality. The use of an angiotensin converting enzyme (ACE) inhibitor also has been demonstrated to reduce progression to overt nephropathy, cardiovascular morbidity and mortality and, perhaps, retinopathy.

5. Refer to nephrologist and/or renal team if creatinine is >1.5mg/dl for women and >1.8mg/dl for men. If renal insufficiency progresses in these patients, it is expected the nephrologist and/or renal team will address preventable and treatable complications of chronic renal failure such as anemia, renal osteodystrophy, metabolic acidosis and hypertension.

**Definitions of abnormalities in albumin excretion*

Category	24-h collection (mg/24 h)	Timed collection (µg/min)	Spot collection (µg/mg creatinine)
Normal	<30	<20	<30
Microalbuminuria	30-300	20-200	30-300
Clinical albuminuria	>300	>200	>300

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